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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/585,267	07/10/2007	Koji Tominaga	KKP0002US	9701
23413 7590 08/30/2010 CANTOR COLBURN, LLP 20 Church Street 22nd Floor Hartford, CT 06103				
EXAMINER ZERVIGON, RUDY				
ART UNIT		PAPER NUMBER		
1716				
NOTIFICATION DATE		DELIVERY MODE		
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

usptopatentmail@cantorcolburn.com

# Office Action Summary

**Application No.**

10/585,267

**Applicant(s)**

TOMINAGA ET AL.

**Examiner**

Rudy Zervigon

**Art Unit**

1716

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 17 June 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) 9 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/CD)  
Paper No(s)/Mail Date 9/12/2008 10/10/2008
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Election/Restrictions***

1. Applicant's election with traverse of Group I in the reply filed on June 17, 2010 is acknowledged. The traversal is on the grounds that :

“

Applicants also note that no "serious burden" is present in examining the one remaining claim, claim 9, and cite the following

“ MPEP 803 is cited.

This is not found persuasive because, as demonstrated by the Examiner's written restriction, the distinct inventions are separately classified.

The requirement is still deemed proper and is therefore made FINAL.

***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 2, 4, 6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. Claims 2, 4 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: Claim 1 requires a “middle line” for both the “precursor supplying line” and “reactive gas supplying line”. Claims 2, 4 do not distinguish between the two.

5. Claim 6 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 6 requires “a concentration adjusting device” and later requires “each concentration adjusting device”. Clarification is required. It is assumed in this action that two “concentration adjusting devices” are claimed.

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1- are rejected under 35 U.S.C. 102(b) as being anticipated by Fujioka, Hiroshi (US 5180684 A). Fujioka teaches a film forming system (Figure 1; column 2; lines 45-67) comprising a chamber (3; Figure 1; column 2; lines 45-67), a precursory gas (12; Figure 1; column 2; lines 45-67) supplying line (12-15-13-3; Figure 1; column 2; lines 45-67) to supply the chamber (3; Figure 1; column 2; lines 45-67) with precursory gas (12; Figure 1; column 2; lines 45-67), a reactive gas (11; column 2; lines 45-67) supplying line (applicant's 1; Figure 6; 11-14-13-3; Figure 1; column 2; lines 45-67) to supply the chamber (3; Figure 1; column 2; lines 45-67) with reactive gas (11; column 2; lines 45-67), and a purge gas supplying line (applicant's 3; Figure 6, all downstream of 9; Figure 1) to supply purge gas that purges the precursory gas (12; Figure 1; column 2; lines 45-67) and the reactive gas (11; column 2; lines 45-67), and that forms a thin film on a substrate in the chamber (3; Figure 1; column 2; lines 45-67) by supplying

the precursory gas (12; Figure 1; column 2; lines 45-67) or the reactive gas (11; column 2; lines 45-67) and purging alternately, wherein further comprising a middle line (applicant's 22; Figure 6; piping between 15 and 13) having a certain volume that is arranged on a part or all of the precursor supplying line (applicant's 2; Figure 6; 12-15-13-3; Figure 1; column 2; lines 45-67) and into which the precursory gas (12; Figure 1; column 2; lines 45-67) can be filled at a time when the precursory gas (12; Figure 1; column 2; lines 45-67) is not supplied, and/or a middle line (applicant's 12; Figure 6; piping between 14 and 13; Figure 1) having a certain volume that is arranged on a part or all of the reactive gas (11; column 2; lines 45-67) supplying line (applicant's 1; Figure 6; 11-14-13-3; Figure 1; column 2; lines 45-67) and into which the reactive gas (11; column 2; lines 45-67) can be filled at a time when the reactive gas (11; column 2; lines 45-67) is not supplied, as claimed by claim 1. Applicant's claim requirement of "reactive gas", "precursory gas", "purging alternately", "at a time when the precursory gas is not supplied", and "at a time when the reactive gas is not supplied" are claim requirements of intended use in the pending apparatus claims. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP2111.02).

Fujioka further teaches

- i. The film forming system (Figure 1; column 2; lines 45-67) described in claim 1, wherein a switching valve (15,13 OR 14,13; Figure 1; column 3;; lines 26-27; See 112, 2nd above) is arranged on an inlet port and an outlet port of the middle line (applicant's 22; Figure 6; piping between 15 and 13) respectively so as to specify a volume of the middle line (applicant's 22; Figure 6; piping between 15 and 13) with the cross-sectional area of a line body constituting the middle line (applicant's 22; Figure 6; piping between 15 and 13) and a distance between each of the switching valves (15,13 OR 14,13; Figure 1; column 3;; lines 26-27; See 112, 2nd above), as claimed by claim 2
- ii. The film forming system (Figure 1; column 2; lines 45-67) described in claim 2, wherein the switching valve (15,13 OR 14,13; Figure 1; column 3;; lines 26-27; See 112, 2nd above) is a three-way valve, as claimed by claim 3
- iii. The film forming system (Figure 1; column 2; lines 45-67) described in claim 1, wherein the purge gas supplying line (applicant's 3; Figure 6, all downstream of 9; Figure 1) is connected to the precursory gas (12; Figure 1; column 2; lines 45-67) supplying line (12-15-13-3; Figure 1; column 2; lines 45-67) to which the middle line (applicant's 22; Figure 6; piping between 15 and 13) is arranged and/or the reactive gas (11; column 2; lines 45-67) supplying line (applicant's 1; Figure 6; 11-14-13-3; Figure 1; column 2; lines 45-67) to which the middle line (applicant's 22; Figure 6; piping between 15 and 13) is \*arranged and the precursory gas (12; Figure 1; column 2; lines 45-67) and/or the reactive gas (11; column 2; lines 45-67) each of which is filled in the middle line (applicant's 22; Figure 6; piping between 15 and 13) is supplied to the chamber (3; Figure 1; column 2; lines 45-67) by pushing out the precursory gas (12; Figure 1; column

- 2; lines 45-67) and/or the reactive gas (11; column 2; lines 45-67) by the use of the purge gas, as claimed by claim 4
- iv. The film forming system (Figure 1; column 2; lines 45-67) described in claim 1, wherein the precursory gas (12; Figure 1; column 2; lines 45-67) and/or the reactive gas (11; column 2; lines 45-67) is supplied to the chamber (3; Figure 1; column 2; lines 45-67) in 0.1 through 2 second, as claimed by claim 5. Applicant's entire claim requirement is a claim requirement of intended use in the pending apparatus claims. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP 2111.02).
- v. The film forming system (Figure 1; column 2; lines 45-67) described in claim 1, and that is arranged to purge the chamber (3; Figure 1; column 2; lines 45-67) so that each concentration of the precursory gas (12; Figure 1; column 2; lines 45-67) and/or the reactive gas (11; column 2; lines 45-67) becomes less than or equal to 1/1000 in less than or equal to 2 seconds, Applicant's entire claim is a claim requirement of intended use in the pending apparatus claims. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally,

in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto, 136 USPQ 458, 459 (CCPA 1963); MPEP2111.02).

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fujioka; Hiroshi (US 5180684 A) in view of Ahn, Kie Y. (US 20020122885 A1). Fujioka is discussed above. Fujioka does not teach Fujioka's film forming system (Figure 1; column 2; lines 45-67) described in claim 1, wherein a concentration adjusting device (Applicant's 91/92; Figure 9; Fujioka's 16; Figure 1) to adjust each concentration of Fujioka's precursory gas (12; Figure 1; column 2; lines 45-67) and Fujioka's reactive gas (11; column 2; lines 45-67) is connected (at 15) to Fujioka's precursory gas (12; Figure 1; column 2; lines 45-67) supplying line (12-15-13-3; Figure 1; column 2; lines 45-67) and Fujioka's reactive gas (11; column 2; lines 45-67) supplying line (applicant's 1; Figure 6; 11-14-13-3; Figure 1; column 2; lines 45-67)<sup>1</sup> respectively and each concentration adjusting device (Applicant's 91/92; Figure 9; Fujioka's 16; Figure 1) adjusts each concentration of Fujioka's precursory gas (12; Figure 1; column 2; lines



45-67) and Fujioka's reactive gas (11; column 2; lines 45-67) so as to supply each gas at more than or equal to 0.15.times.10.sup.-6 mol/cm.sup.2 with respect to an area of the substrate on which the thin film is formed, as claimed by claim 7. With respect to Applicant's claim requirement of "...so as to supply each gas at more than or equal to 0.15.times.10.sup.-6 mol/cm.sup.2 ...", said claim requirement is an intended use claim requirement in the pending apparatus claims.

Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP2111.02).

As noted in the Examiner's 112 rejection of claim 6, it is assumed in this rejection that the claimed "concentration adjusting device" is plural pumps as shown in Applicant's Figure 9 at 91,92. Fujioka does not show plural dedicated pumps for Fujioka's piping lines.

Ahn also teaches a CVD apparatus including a dedicated vacuum pump for his precursor gases (X,Y; Figure 1).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for Fujioka to add dedicated pumps for each of Fujioka's sources as taught by Ahn.

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<sup>1</sup> At 14

Motivation for Fujioka to add dedicated pumps for each of Fujioka's sources as taught by Ahn is for "concurrent" pumping to establish "initial pressure conditions" as taught by Ahn ([0035]).

10. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fujioka; Hiroshi (US 5180684 A) in view of Udagawa; Takashi (US 6645302 B2). Fujioka is discussed above. Fujioka does not teach Fujioka's film forming system (Figure 1; column 2; lines 45-67) described in claim 1, wherein each of Fujioka's precursory gas (12; Figure 1; column 2; lines 45-67) supplying line (12-15-13-3; Figure 1; column 2; lines 45-67) and Fujioka's reactive gas (11; column 2; lines 45-67) supplying line (applicant's 1; Figure 6; 11-14-13-3; Figure 1; column 2; lines 45-67) *is independently connected* to Fujioka's chamber (3; Figure 1; column 2; lines 45-67).

Udagawa teaches a similar CVD vapor precursor delivery system (Figure 17) including independently connected precursor delivery lines (29-1, 29-2; Figure 17) from independent sources (49, 50; Figure 17) respectively.

It would have been obvious to one of ordinary skill in the art at the time the invention was made for Fujioka to add additional precursor source(s) as taught by Udagawa.

Motivation for Fujioka to add additional precursor source(s) as taught by Udagawa is for depositing films of plural compositions as taught by Udagawa (column 9, lines 28-60).

### ***Conclusion***

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Rudy Zervigon whose telephone number is (571) 272-1442. The examiner can normally be reached on a Monday through Thursday schedule from 8am through 6pm EST. The fax phone number for the organization where this application or

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proceeding is assigned is 571-273-8300. Any Inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Chemical and Materials Engineering art unit receptionist at (571) 272-1700. If the examiner can not be reached please contact the examiner's supervisor, Parviz Hassanzadeh, at (571) 272- 1435.

/Rudy Zervigon/

Primary Examiner, Art Unit 1792